



Classification Notes

Chapter 18



Finding Order in Diversity

1. Why Classify?

To study the diversity of life
To organize and name organisms

2. Why give scientific names?

Common names are misleading



jellyfish



silverfish



star fish

None of these animals are fish!

Why Scientists Assign Scientific Names to Organisms

Some organisms have several common names

This cat is commonly known as:

- Florida panther
- Mountain lion
- Puma
- Cougar



Scientific name: *Felis concolor*

Scientific name means “coat of one color”

Classification

Taxonomy- the field of Biology that identifies and classifies organisms.

Binomial Nomenclature: “two-word” naming system used to identify organisms.

Linnaeus: The Father of Modern Taxonomy

1732: Carolus Linnaeus developed system of classification - binomial nomenclature

- Universally accepted naming system
- Gave organisms 2 names

Genus (noun) and species (adjective)

Rules for naming organisms

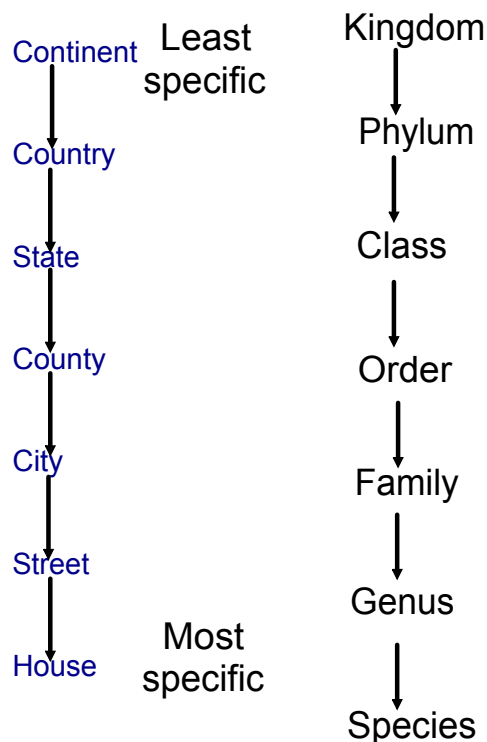
1. Written in Latin (unchanging)
2. Genus capitalized, species lowercase
3. Both names are italicized or underlined

EX: Homo sapiens



Carolus
Linnaeus

Linnaeus's System of Hierarchy



Which of the following contains all of the others?

- a. Family
- b. Species
- c. Class
- d. Order

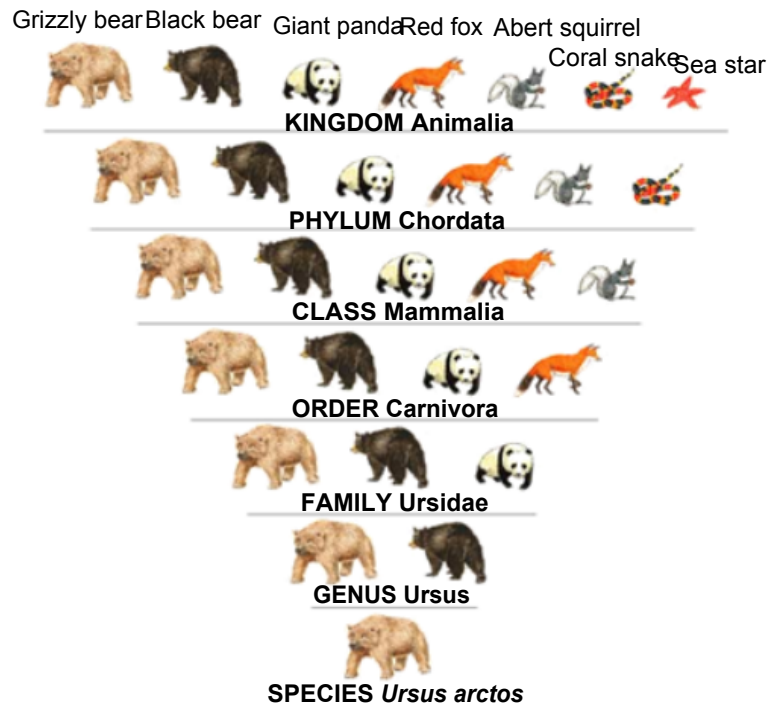
Based on their names, you know that the cats *Felis catus* and *Felis margarita* do not belong to the same:

- a. Family
- b. Genus
- c. Order
- d. Species

Linnaeus's System of Hierarchy

As we move from the kingdom level to the species level, more and more members are removed.

Each level is more specific.



The kingdom is the largest and most inclusive of Linnaeus's taxonomic categories.



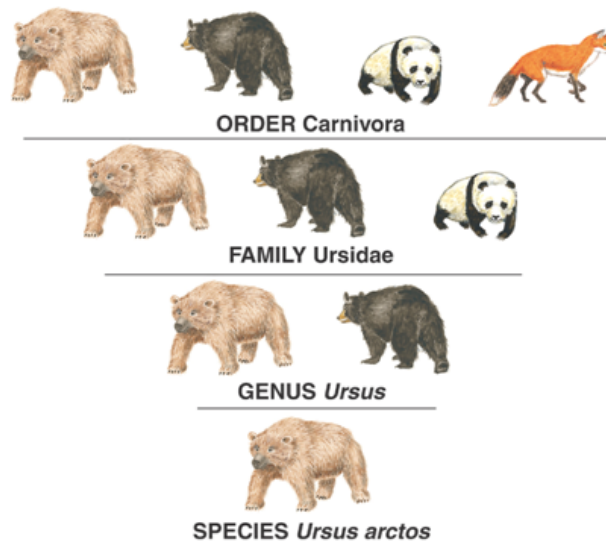
Several different classes make up a **phylum**.



The next larger category, the **class**, is composed of similar orders.



An **order** is a broad category composed of similar families.



Genera that share many characteristics are grouped in a larger category, the **family**.



Each level is called a **taxon**, or taxonomic category. **Genus** and **species** are the two smallest categories



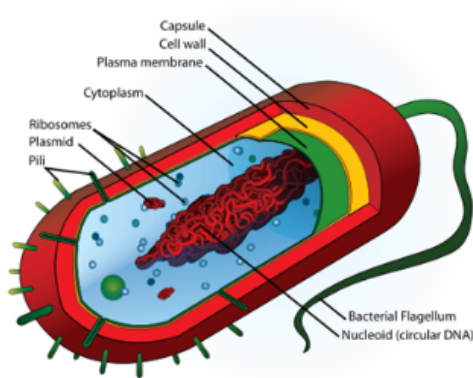
The Three-Domain System

Molecular analyses have given rise to a new taxonomic category that is now recognized by many scientists.

The **domain** is a more inclusive category than any other—larger than a kingdom.

The Three-Domain System

The three domain system recognizes fundamental differences between two groups of prokaryotes.



Prokaryote- single celled organism without a nucleus, ex. bacteria

Six Kingdoms

Recently, biologists recognized that Monera were composed of two distinct groups of prokaryotes: Eubacteria and Archaeobacteria.

The six-kingdom system of classification includes:

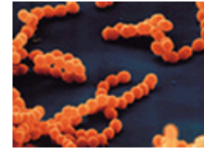
- **Eubacteria**
- **Archaeobacteria**
- **Protista**
- **Fungi**
- **Plantae**
- **Animalia**

Kingdom Eubacteria

Cell Type	Prokaryote
Number of Cells	Unicellular
Nutrition	Autotroph or Heterotroph
Examples	Streptococcus, Escherichia coli (E. coli)



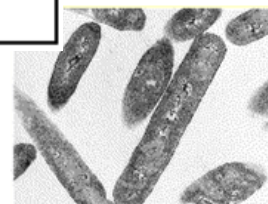
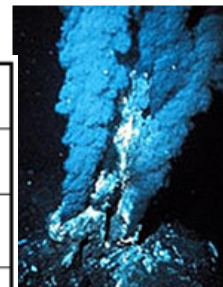
E. coli



Streptococcus

Kingdom Archaeobacteria

Cell Type	Prokaryote
Number of Cells	Unicellular
Nutrition	Autotroph or Heterotroph
Location	Extreme Environments Volcanoes, Deep Sea Vents, Yellowstone Hot Springs
Examples	Methanogens Thermophiles

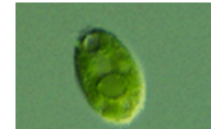


Kingdom Protista

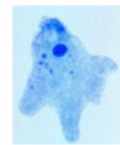
Cell Type	Eukaryote
Number of Cells	Most Unicellular, some multicellular
Nutrition	Autotroph or Heterotroph
Examples	Amoeba, Paramecium, Euglena,



Paramecium



Green algae



Amoeba

The "Junk-Drawer"
Kingdom

Kingdom Fungi

Cell Type	Eukaryote
Number of Cells	Most multicellular, some unicellular
Nutrition	Heterotroph
Example	Mushroom, yeast, mildew, mold



Mildew on Leaf



Mushroom

Most Fungi are
DECOMPOSERS

Kingdom Plantae

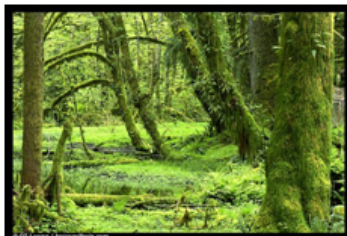
Cell Type	Eukaryote
Number of Cells	Multicellular
Nutrition	Autotroph
Examples	Mosses, ferns, conifers, flowering plants



Ferns :
seedless
vascular



Douglas fir:
seeds in cones



Mosses growing
on trees



Sunflowers:
seeds in
flowers

Kingdom Animalia

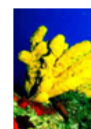
Cell Type	Eukaryote
Number of Cells	Multicellular
Nutrition	Heterotroph
Examples	Sponges, worms, insects, fish, mammals



Jellyfish



Hydra



Sponge



Bumble bee



Sage grouse



Poison dart frog